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(54) METHOD OF PACKAGING POWDERS AND PASTES

(71) We, IMPERIAL CHEMICAL INDUSTRIES LIMITED, Imperial Chemical House, Millbank, London SW1P 3JF, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a new method of packaging especially useful for dyestuffs or pigments in the form of powders or pastes.

Dyestuffs and pigments are usually marketed either as a fine powder or as stiff pastes with some liquid in which they are likely to be used. Often such powders and pastes are supplied in a flexible bag contained within a rigid outer container for support and protection against mechanical damage, for example, the powders or pastes may be supplied in a polythene bag inside a metal drum or cardboard box. When transferring the product from such containers in which it is supplied it is often done by hand e.g. using a simple scoop, and this frequently results in waste and contamination. Thus powdered products especially become scattered as a dust, producing unpleasant working conditions potentially hazardous to the health of the operatives. The contents of the open containers of powder or paste are frequently themselves subject to contamination by air borne particles e.g. of other dye powders which can discolour the contents especially if the contents of the container is of a pale shade. The lids of the opened rigid containers need space to accommodate them and they often constitute a further source of contamination when, for example, detachable lids are replaced on a different container in error or placed on a work surface. As the container is progressively emptied it becomes more and more necessary for the operators to delve into the flexible bag resulting in a contamination of their hands, arms and clothing.

The present invention provides a method of packaging which enables the contents to be removed with a minimum of the difficulties described above.

According to the present invention there is provided a method of packaging dyes or pigments in the form of powders or pastes in a lidded rigid container with a wholly or partially flexible liner which comprises:

- (a) charging the dye or pigment in the form of a powder or paste to the wholly or partially flexible liner,
- (b) closing the said liner, and
- (c) packing said liner in the rigid container which is provided with an aperture or means for forming an aperture in addition to that formed by opening or removal of the lid so that after storage or transport a re-sealable closure or dispensing means may be fitted in the aperture, after forming if necessary, to provide access to the powder or paste within the said liner.

The liner may be placed in the rigid container before or after charging with the powder or paste.

It is usually preferred that the wholly or partially flexible liner is wholly flexible and especially that it is in the form of a flexible bag.

The aperture referred to above may be formed in the lid of the rigid container but it is usually preferred to have the aperture in one of the walls of the container, particularly in the region close to the lid.

To assist understanding of the present invention a specific embodiment will now be described with reference to the drawings accompanying the provisional specification, in which:

Figure 1 is a perspective view of a rigid container with a sealed flexible inner liner. Figure 2 is a section of the aperture and adjacent wall of the rigid container of Figure

1 having a closure device located in the aperture and fixed into the flexible inner container.

5 Figure 3 is a side-view of the rigid container in an inverted position.

Referring to Figure 1 the rectilinear cardboard box 10 has lid flaps 11 and is perforated on one face in the shape of a circle 12 with an extension 17 at one point on its circumference. The circle 12 is positioned close to the centre of the edge adjacent to the lid 11. A slot shaped set of perforations 13 is on the vertical centre line of the face in a position below the circle 12 i.e. more distant from the lid 11. A polythene bag 14 filled with dye or pigment is inside the box 10 taking up the configuration of the box at the bottom and at the sides. The polythene bag 14 has an offset neck 15 through which it was filled and sealed at 16.

The container will be set up for use i.e. removal of the contents, as follows:

The lid 11 is opened and the shapes bounded by the perforations are knocked out thus providing a circular aperture 12 having an extension 17 and a slot 13. A closure device is fitted to the aperture 12 as shown in Figure 2. This closure device consists of a short circular pipe 18 whose outer diameter gives a close fit with the aperture 12. It has a terminal flange 19 extending radially outwards and a second parallel flange 20 partially surrounds the pipe 18 a short distance from the terminal flange 19. The missing portion of the flange 20 allows the pipe 18 to be passed through the aperture 12 with flange 20 passing through the extension 17 and rotated to locate the flanges 19 and 20 one on each side of the walls of the box 10.

The seal at 16 on the neck 15 of the polythene bag 14 is cut away and the opened neck is passed over the pipe 18 and secured by an elastic ring 25 located over a circumferential groove 26. The lid 11 of the box 10 is now closed.

Secured to the outer face of flange 19 is a circular flap 21 pivoted to move in its own plane about a pin 23. Access to the bag is obtained by swinging the flap 21 aside using the knob 22. To aid positioning and securing the flap in the closed position a semi-circular channel 24 is fixed to slightly less than half of the outer edge of flange 19 commencing just beyond the pin 23, with its open face at right angles to the plane of the flap 21.

Material is removed via pipe 18 and the lid 11 is not opened. As the level of material in the bag is reduced the box is tilted towards the pipe and finally inverted to facilitate removal of the last part of the contents. Alternatively, the box may be inverted immediately after fitting the closure device,

but do not flood out through the opening.

When the lid 11 is closed after joining the bag to the pipe a packing piece or fillets of cardboard may be inserted in the edges of the box closest to and parallel with the axis of the pipe 18. Thus when inverted the polythene bag is formed into a channel or trough as shown in Figure 3 thereby facilitating removal of the last traces of contents from the bag. The slot 13 provides an aid to observing how much material remains in the bag when the box has been inverted.

Many alternative embodiments of the present invention are possible.

For example the rigid outer container may be constructed of metal and have a cylindrical shape, lids may be detachable instead of being hinged.

The aperture through which the closure or device is inserted may be provided already cut out but temporarily closed by an easily removed material e.g. adhesive tape or paper stuck across it.

The liner may be constructed from any flexible material appropriate to the product it must contain e.g. bags of paper, regenerated cellulose, polypropylene or rubber may be used and closed after filling by sealing or merely tying the neck.

The liner need not be wholly flexible e.g. the body of the liner may be rigid (and preferably of the same shape as the outer container) providing it has a flexible neck portion.

A wide range of closure devices may be used in conjunction with the packages of the present invention. They may be fitted to the rigid outer container by bolting, clipping or even adhesive means through this would not normally be appropriate for expensive reusable devices.

When a package has been partially emptied and it has to be re-stored for a long period the openable flap or door may be removed and replaced by a more secure closure e.g. a disc having a flexible gasket bolted or clamped into position.

The box described above may be modified so that the perforations defining the circular aperture are interrupted thus enabling a flap of cardboard to be formed which hinges on the unperforated area of cardboard. This flap can serve as the cover for a correspondingly shaped member e.g. a flanged pipe secured through the inner liner and which can be positioned behind the aperture formed by the flap. The flanged pipe or equivalent item may be fitted to the liner before the box of dyestuff is sold and closed by some temporary cover e.g. by adhesive paper or foil during transit and storage. This flanged pipe or equivalent device may be fitted to the flexible liner before it is filled and may be used to facilitate the filling of

the container e.g. by locating in an outlet on the bulk storage vessel of the stuff.

As an alternative to closure devices, a dispensing device may be used with the packages of the present invention. These are usually attached to the rigid container in a similar fashion to the closure device but have, in place of the door or flap, a means for providing and controlling an out flow of the contents of the package. With such devices it is normal to invert the package immediately it is secured through the flexible inner. To facilitate the operation of such devices it is usual to provide the fillets or packing piece to form a channel or trough leading towards the outlet. In the case of free flowing powders, the dispensing device may be a simple tap but in most cases and especially for pastes, some means of conveying the contents to the outlet are desirable. Thus for example the dispensing device may be in the form of a screw or scroll extending into the contents and provided with a handle for rotating it and an outlet port both external to the package. Alternatively the dispensing device may be of the piston pump type which can have the added advantage that it delivers the contents in "shots" of predetermined size. With stiff pastes it may be advantageous to provide a load or pressure on the inner flexible liner to ensure the paste moves down to and feeds the dispensing device.

WHAT WE CLAIM IS:—

1. A method of packaging dyes or pigments in the form of powders or pastes in a lidded rigid container with a wholly or partially flexible liner which comprises:
 - (a) charging the dye or pigment in the

- (b) form of a powder or paste to the wholly or partially flexible liner,
- (c) closing the said liner, and
- (c) packing said liner in the rigid container which is provided with an aperture or means for forming an aperture in addition to that formed by opening or removal of the lid so that after storage or transport a re-sealable closure or dispensing means may be fitted in the aperture, after forming if necessary, to provide access to the powder or paste within the said liner.

2. A method as claimed in claim 1 wherein the liner is charged before placing in the rigid container.

3. A method as claimed in claim 1 wherein the liner is positioned in the rigid container before charging with powder or paste.

4. A method as claimed in any one of claims 1 to 3 in which the wholly or partially flexible liner is a flexible bag.

5. A method as claimed in any one of claims 1 to 4 in which the aperture or aperture-forming means is in a wall of the rigid outer container other than the lid.

6. A method as claimed in any one of claim 1 to 5 in which the rigid container is provided with internal fillets which tend to form the liner into a channel configuration directed towards the aperture.

7. A method of packaging dyes or pigments in the form of powders and pastes substantially as herein described with reference to the drawings accompanying the provisional specification.

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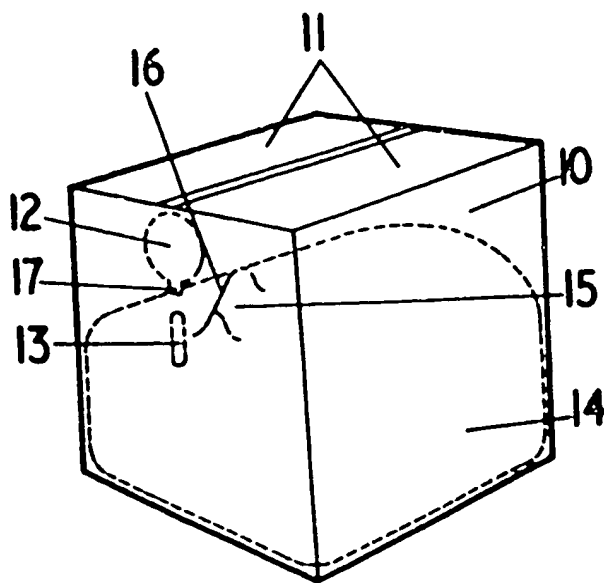


Fig 1

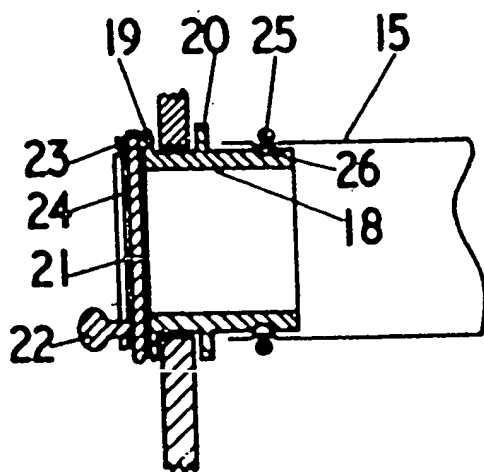


Fig 2

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2 SHEETS

PROV. ONAL SPECIFICATION

*This drawing is a reproduction of
the Original on a reduced scale*
Sheet 2

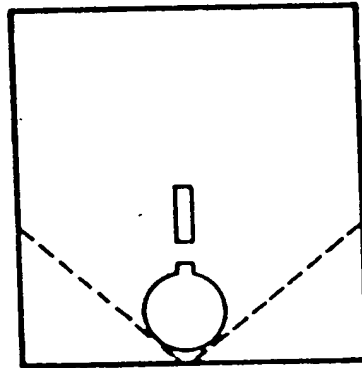


Fig 3

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